



Driving Productivity and Efficiency Gains with Real Time Visibility Solutions

CEAT Ltd. and Zebra Technologies have had a strong business partnership for many years. Zebra's engagement with CEAT has been that of a trusted advisor, working collaboratively in improving efficiencies and building increased profitability for CEAT at their manufacturing plants across India. Zebra's mobility, printing and scanning solutions have been integrated within the Manufacturing Information System (MIS) at CEAT's manufacturing plant in Halol, Gujarat.



SUMMARY



Customer

CEAT Ltd.

Industry

Manufacturing

Challenge

Deploy advanced technologies to simplify manufacturing processes. Build automated workflows to deliver efficiency and greater value through always-on data streams; and allow mobility and traceability on the shop floor.

Solution

- DS457 Fixed Scanner
- ZT230 Industrial Printer
- MC3200 Mobile Computer

Results

- Greater mobility and traceability in manufacturing
- Improved Customer Satisfaction Index ('First Time Right' dispatches to internal customers) from 99.5% to 100%
- Reduced Non-Value Added time of fault finding and customer complaints handling by 20x
- Enhanced visibility, accountability and productivity
- 60% reduction in contract manpower with automated workflows
- 200% increase in efficiency of frontline managers
- Report preparation time reduced from 2 hours per day to 5 minutes.
- Automated tyre in-warding in warehouse reduced manual work from 28 man hours per day to 28 man minutes per day
- Detection and prevention rates for wrong inventories improved by 15%, reducing overall risk by 21%
- Significant reduction in paper usage helped the plant become paperless

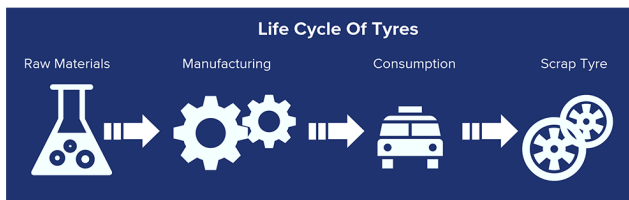
The CEAT Story

India's leading tyre manufacturer, CEAT is driving a safe ecosystem for mobility in India. CEAT produces tyres for the Indian commercial and passenger vehicle segments at its Mumbai, Nashik, Halol and Nagpur manufacturing plants. The company strives towards operational excellence through Total Quality Management at its plants and has recently implemented advanced technological capabilities at Halol, where CEAT has also been driving the adoption of digitization and automation in the production of highly-durable and customized radial tyres.



The Process at Halol

The Halol plant produces Passenger Car, Truck and Bus radials. Tyre manufacturing involves receiving raw materials at Raw Materials Storage (RMS), followed by various stages of processing, such as, Mixing, Extrusion, Calendaring, Stock Preparation, Tyre Building, Curing, Inspection, and final dispatches from Final Goods Storage (FGS).



At the plant, activities are sought towards the development of new tyre designs and chemical formulations along with the use of better raw materials. The aim is to improve processes consistently, and achieve greater quality, productivity and efficiency.

The Challenge

The MIS at Halol is a software application on computing systems displayed on the shop floor. With this MIS, there is manual dependency on tracking of raw materials and semi-finished goods. The production data for each of the 300+ equipment at the plant is also tracked and manually fed into an Enterprise Resource Planning (ERP) platform leading to reduced reliability in production planning, as the manual data input increases the possibility of errors.

Compounds used in the making of tyres look similar, which leads to increased probability of loading wrong materials in the process. If any control parameter runs out of specifications, a tedious manual checking and reporting procedure is followed, leading to delays in production. There is also a manual process that involves the creation of production and raw material tags in the stocking area at the RMS, which is time consuming and error-prone. Additionally, the resolution time for customer complaints is also error-prone.

The Requirement

CEAT was eager to deploy technologies to simplify these processes and have a smarter workflow. The MIS required solutions that would deliver new levels of efficiency and greater value, through the use of always-on data streams. Mobility and traceability would be invaluable attributes of the solutions. The MIS would help CEAT track raw materials and semi-finished goods with a single barcode. 'Poke-Yoke' implementation and interlocks would avoid wrong component loading and allow live data flows of process-wise production information and confirmation, into the ERP from the shop floor. An automated capturing process of production stages such as, mixing, stock preparation, tyre building, curing and uniformity would be possible. The MIS would track Materials Handling Equipment (MHE) stock and capture inventory for semi-finished goods, thereby avoiding wrong identification of goods. In this way, CEAT would have real time production information, anytime, anywhere.

The Solution

CEAT consulted with Zebra Technologies to understand what solutions would best fit their requirements and integrate seamlessly with their existing MIS. Zebra's barcode scanning, printing and mobile computing solutions were identified as the much needed efficiency boosters. Soon after, CEAT successfully deployed Zebra's solutions at their plant. The solutions integrated with the MIS were:

DS457 Fixed Mount Scanner – From the warehouse and loading dock to the shop floor, this ultra-rugged scanner helps achieve maximum visibility into inventory. Its productivity-enhancing applications drive workflow efficiencies and are optimized to meet industrial scanning needs. The device's bi-optic imaging allows high-performance scanning of mobile barcodes.

ZT230 Industrial Printer – This rugged and durable industrial device provides a wide range of label printing applications from industrial to high-resolution micro labels for miniature components. It improves tracking and access control by supporting magnetic stripe, encoding and multiple connectivity options. Designed for wireless, on-demand printing applications, it increases productivity and accuracy in manufacturing and warehousing through reliable data capture.

MC3200 Mobile Computer – The user interface of the handheld and mobile MC3200 includes a display, a keypad and a scanner. Integrated with a gun grip, it scans the unique barcode on a material unit. This rugged mobile device allows positive identification of assets and raw materials against the production process. The MC3200 is also programmed to alert users in the event that a wrong material is about to be loaded into the production process.



DS457 Fixed Mount Scanner



ZT230 Industrial Printer



MC3200 Mobile Computer

Business Result

CEAT's transformed MIS is mobile-enabled and available to users at the point of activity. Zebra's solutions are integrated in conjunction with CEAT's WLAN infrastructure. CEAT's traceability application is customized and installed on Zebra's devices. Users now access data and update it in real time. Having introduced traceability and positive identification, CEAT has seen extensive improvement in productivity and elimination of reverse logistics due to wrong dispatches. Previously, wrong dispatches took place when a wrong tyre was loaded in the wrong truck. Similar advantages are seen on the shop floor, where processes are followed as per design, with a reduction in rejections. Streamlined processes come with faster and error-free data inputs using barcodes. User-friendly device interfaces allow workers to use them with minimal training. Zebra's products are built to withstand extreme conditions on the shop floor, including heat and dirt in mixing and curing processes.

Impact



Improved Customer Satisfaction Index ('First Time Right' dispatches to internal customers) from 99.5% to 100%



Reduced Non-Value Added time of fault finding and customer complaints handling by 20x



Enhanced visibility, transparency, accountability



60% reduction in contract manpower used for manual data entries



200% increase in efficiency of frontline managers



Reduction in report preparation time from 2 hours per day to just 5 minutes



Data reliability increased multi-fold with basic data analytics layers built into the MIS



Transformed MIS to be utilized to build customized future models



Automated tyre in-warding in warehouse reduced manual work from 28 man hours per day to 28 man minutes per day



Detection and prevention rates for wrong inventories improved by 15%, reducing overall risk by 21%



Significant reduction in paper usage helped the plant become paperless

Future Outlook



CEAT WINS THE PRESTIGIOUS DEMING PRIZE

CEAT RANKED FIRST IN ORIGINAL EQUIPMENT TYRE CUSTOMER SATISFACTION

CEAT WINS THE PRESTIGIOUS Sword of Honor

CEAT's focus on quality management made it the first tyre company outside of Japan, to get the coveted Deming Prize 2017.

CEAT ranked the highest among Indian tyre manufacturers in the J.D. Power 2017 India - Original Equipment Tyre Customer Satisfaction Index (TCSI) Study, based on a survey of 3,346 customers in May-August 2016, who purchased vehicles from May 2014-August 2015.

CEAT received the 'Sword of Honor', the highest manufacturing excellence award by the British Safety Council for its Halol Plant.

Zebra has helped CEAT's Halol plant transform into a more intelligent facility, aligning it to CEAT's long-term vision. Zebra's solutions are scalable and offer quality, value and prompt delivery. With automated interventions, these solutions have brought greater efficiencies and effectiveness. Where quality is concerned, errors are detected during testing and wrong materials can be held back before reaching the production or manufacturing stage. Scanning assets and materials are loaded, saving time and equipment cycle costs. On the cost front, contract manpower is considerably reduced due to automated data entry procedures.

CEAT continues to uphold its mission of delivering best-in-class products and services to customers on the back of innovative technological advancements and achieve positive business impact. Where intelligence is concerned, CEAT's differentiating factor is the effective utilization of available data to improve quality parameters for tyres through the minimization of variations. With data available in an automated format, decision making is faster and more informed.

For its newest facility in Nagpur, CEAT has also implemented Zebra's visibility solutions-making it the company's first 'Industry 4.0' plant. The Nagpur facility-significantly larger than the Halol one-is designed as a 'smart plant', making it the first two wheeler tyre manufacturing plant in India to be conceptualized with digital technologies from the ground up. This will be the stepping stone towards the journey of artificial intelligence, where machines improve the quality of products to be delivered based on algorithms.

"Zebra has provided us with a winning edge in a competitive automotive market. Automation technologies such as Zebra's are helping build smart factories. In future, we intend to automate various manufacturing processes at all our plants, with the first major implementation being initiated at our newest facility at Nagpur."

GOPAL RATHORE, IT MANAGER, CEAT LTD.

For more information please visit www.zebra.com/manufacturing



NA and Corporate Headquarters
+1800 423 0442
inquiry4@zebra.com

Asia-Pacific Headquarters
+65 6858 0722
contact.apac@zebra.com

EMEA Headquarters
zebra.com/locations
contact.emea@zebra.com

Latin America Headquarters
+1 847 955 2283
la.contactme@zebra.com